

$$\begin{array}{ccc|ccc} 0 & 1 & -1 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 & 0 & 1 & 0 & 0 \\ 2 & 0 & 0 & 1 & 0 & 0 & 1 & 0 \\ -1 & 2 & 1 & 0 & 0 & 0 & 0 & 1 \end{array}$$

Vertausche I und II

$$\begin{array}{ccc|ccc} 1 & 0 & -1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 2 & 0 & 1 & 0 & 0 & 1 & 0 \\ 2 & -1 & 1 & 0 & 0 & 0 & 0 & 1 \end{array}$$

I + III → III

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 2 & 0 & 1 & 0 & 0 & 1 & 0 \\ 2 & -1 & 3 & 0 & 0 & 0 & 0 & 1 \end{array}$$

-II + III → III

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & 0 & 1 & -1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 & 1 & 0 \\ 0 & 2 & -2 & 1 & 0 & 0 & 1 & 0 \\ 2 & -1 & 4 & 0 & 0 & 0 & 0 & 1 \end{array}$$

$\frac{1}{2}$ III + IV → IV

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & 0 & 1 & -1 & -\frac{1}{2} \\ 0 & 1 & 0 & 0 & 1 & 0 & 1 & \frac{1}{2} \\ 0 & 2 & -2 & 0 & 0 & 0 & 1 & \frac{1}{2} \\ 2 & -1 & 4 & 2 & 0 & 0 & 0 & 1 \end{array}$$

A · R

R

*

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & 0 & 1 & -1 & -\frac{1}{2} \\ 0 & 1 & 0 & 0 & 1 & 0 & 1 & \frac{1}{2} \\ 0 & 2 & -2 & 0 & 0 & 0 & 1 & \frac{1}{2} \\ 2 & -1 & 4 & 2 & 0 & 0 & 0 & 1 \end{array}$$

-2IV + III → III

$\frac{1}{2}$ III + II → II

-IV + I → I

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & \frac{1}{2} & \frac{3}{4} & 0 & -\frac{1}{2} \\ 0 & 1 & 0 & 0 & \frac{1}{2} & \frac{1}{4} & 0 & \frac{1}{2} \\ 0 & 2 & -2 & 0 & -\frac{1}{2} & \frac{1}{4} & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 2 & -1 & -\frac{1}{2} & -2 & 1 \end{array}$$

III + II → II

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & \frac{1}{2} & \frac{3}{4} & 0 & -\frac{1}{2} \\ 0 & 1 & 0 & 0 & \frac{1}{2} & \frac{1}{4} & 0 & \frac{1}{2} \\ 0 & 0 & -2 & 0 & -\frac{1}{2} & \frac{1}{4} & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 2 & -1 & -\frac{3}{2} & -2 & 1 \end{array}$$

III durch 2 teilen

IV durch 2 teilen

$$\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & \frac{1}{2} & \frac{3}{4} & 0 & -\frac{1}{4} \\ 0 & 1 & 0 & 0 & \frac{1}{2} & \frac{1}{4} & 0 & \frac{1}{4} \\ 0 & 0 & 1 & 0 & -\frac{1}{2} & \frac{1}{4} & 0 & \frac{1}{4} \\ 0 & 0 & 0 & 1 & -1 & -\frac{3}{2} & 1 & \frac{1}{2} \end{array}$$

A · R = I

R = A⁻¹

Vol = 1

Volumen von A

$$= 1 \cdot (-2) \cdot 2 \cdot (-1)$$

↑ Vol(I) ↑ Spalten teilen ↑ Spalten tauschen

$$= 4$$

$$\boxed{\det(A) = 4}$$